



Climate change and range expansion of the Asian tiger mosquito (*Aedes albopictus*) in Northeastern USA: Implications for public health practitioners

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Abstract:

The Asian tiger mosquito, *Aedes albopictus* (Skuse), is an invasive species with substantial biting activity, high disease vector potential, and a global distribution that continues to expand. New Jersey, southern New York, and Pennsylvania are currently the northernmost boundary of established *Ae. albopictus* populations in the eastern United States. Using positive geographic locations from these areas, we modeled the potential future range expansion of *Ae. albopictus* in northeastern USA under two climate change scenarios. The land area with environmental conditions suitable for *Ae. albopictus* populations is expected to increase from the current 5% to 16% in the next two decades and to 43%-49% by the end of the century. Presently, about one-third of the total human population of 55 million in northeastern USA reside in urban areas where *Ae. albopictus* is present. This number is predicted to double to about 60% by the end of the century, encompassing all major urban centers and placing over 30 million people under the threat of dense *Ae. albopictus* infestations. This mosquito species presents unique challenges to public health agencies and has already strained the resources available to mosquito control programs within its current range. As it continues to expand into areas with fewer resources and limited organized mosquito control, these challenges will be further exacerbated. Anticipating areas of potential establishment, while planning ahead and gathering sufficient resources will be the key for successful public health campaigns. A broad effort in community sanitation and education at all levels of government and the private sector will be required until new control techniques are developed that can be applied efficiently and effectively at reasonable cost to very large areas.

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3614918>

Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES)

Special Report on Emissions Scenarios (SRES) Scenario: SRES A2, SRES B2

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change;
 surveys of attitudes, knowledge, beliefs about climate change

Climate Change and Human Health Literature Portal

A focus of content

Communication Audience:

audience to whom the resource is directed

Health Professional

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Precipitation, Temperature

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

United States

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: General Mosquito-borne Disease

Medical Community Engagement:

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation, Mitigation

Model/Methodology:

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale: ☒

time period studied

Long-Term (>50 years)

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content